high spring constant applies a pre-load to parts of the toothed surfaces of the worm and worm wheel and brings them into contact, wherein the amount of increase in torque of the assist shaft due to the rise in friction force in the area where the worm shaft meshes with the worm wheel caused by applying an elastic force having a low spring constant to the worm shaft is kept within a range of 0.4 Nm to 5 Nm.

2. (original) The assist apparatus for an electric-powered power steering apparatus described in Claim 1, wherein the total sum δ_1 of the gaps in the radial direction existing inside the second bearing, in the fitting section between the inner race of the second bearing and the rotating shaft, and in the fitting section between the outer race of the second bearing and the inner surface of the casing is less than the total sum δ_2 of the gaps in the radial direction existing inside the third bearing, in the fitting section between the outer race of the third bearing and the inner surface of the gear housing, in the fitting section between the inner race of the third bearing and the worm shaft, and in the connecting section between the worm shaft and the rotating shaft.

3. (original) The assist apparatus for an electric-powered power steering apparatus described in Claim 1, wherein when the amount of displacement in the radial direction of a point on the center axis of the rotating shaft where a 20 N force is applied in the radial direction, to a place on the rotating shaft that coincides in the axial direction with the second bearing is taken to be x_1, and the amount of displacement in the radial direction of a point on the center axis of the worm shaft where a 20 N force is applied in the radial direction, to a place on the worm shaft that coincides in the axial direction with the third bearing is taken to be x_2, and the displacement in the radial direction of the center axis of the rotating shaft with reference to the center axis of the worm shaft in a part connecting the center axis of the worm shaft with the center axis of the rotating shaft when a 20 N force is applied in the radial direction to the part on the rotating shaft where the worm shaft and rotating shaft are connected is taken to be x_3, $x_1 < (x_2 + x_3)$.

4. (previously presented) The assist apparatus for an electric-powered power steering apparatus described in Claim 1, wherein the angle between the worm shaft and rotating shaft when driven by the electric motor is less than the angle between the worm shaft and the rotating shaft when not driven by the electric motor.

5. (previously presented) The assist apparatus for an electric-powered power steering apparatus described in Claim 1, wherein the angle between the center axis of the worm shaft and the center axis of the rotating shaft when driven by the electric motor is 10 minutes or less.

6. (previously presented) The assist apparatus for an electric-powered power steering apparatus described in any of Claim 1, wherein the third bearing is a deep-groove type ball bearing having a C2 or C3 internal clearance.

7. (previously presented) The assist apparatus for an electric-powered power steering apparatus described in Claim 1, wherein the third bearing is a four-point contact type ball bearing.

8. (previously presented) The assist apparatus for an electric-powered power steering apparatus described in Claim 1, wherein the balls of at least one of the third and fourth bearings are pre-loaded in the axial direction by a force of 20 N to 200 N.

9. (previously presented) The assist apparatus for an electric-powered power steering apparatus described in Claim 1, wherein the connection between the worm shaft and the rotating shaft is located at a position that coincides in the axial direction with the third bearing.

10. (previously presented) The assist apparatus for an electric-powered power steering apparatus described in Claim 1, wherein the ends of the worm shaft and the rotating shaft are connected by a spline joint and wherein the displacement in center of both shafts due to clearance in the radial direction of the spline joint is kept within 10 μm to 200 μm.

11. (previously presented) The assist apparatus for an electric-powered power steering apparatus described in Claim 1, wherein the ends of the worm shaft and rotating shaft are connected to each other by a spline joint, and wherein the displacement of the centers of the worm shaft and rotating shaft due to the clearance existing in-row section between the casing which supports the end of the rotating shaft, and the gear housing which supports the end of the worm shaft, is less than the displacement of the center of these shafts due to the clearance in the radial direction existing in the spline joint.

12. (previously presented) The assist apparatus for an electric-powered power steering apparatus described in Claim 1, wherein the rotor comprises a permanent magnet and the stator comprises a coil, and wherein a vector-control apparatus changes the magnetic force of the stator.

13. (previously presented) The assist apparatus for an electric-powered power steering apparatus described in Claim 1, wherein a controller controls the output of the electric motor according the amount of displacement in the radial direction of the worm shaft.

14. (previously presented) The assist apparatus for an electric-powered power steering apparatus described in Claim 1, wherein the amount of displacement in the radial direction of the center axis of the worm shaft at a portion where a 20 N force is applied in the radial direction and where the worm shaft coincides in the axial direction with the second bearing is 5μm to 200μm.

15. (previously presented) The assist apparatus for an electric-powered power steering apparatus described in Claim 1, wherein the force received by the second bearing from the rotating shaft due to the force acting on the area where the worm wheel meshes with the worm shaft when driven by the electric motor is less than the force received by the third bearing from the worm shaft due to the force that acts on this same area of meshing.

16. (previously presented) The assist apparatus for an electric-powered power steering apparatus described in Claim 1, wherein the position of the center in the axial direction of the spline joint between the worm shaft and the rotating shaft is located closer to the third bearing than the position of the center in the axial direction between the second bearing and the third bearing.

17. (previously presented) The assist apparatus for an electric-powered power steering apparatus of Claim 1, wherein the elastic force is applied to the worm shaft from the elastic-force application means located inside the gear housing without by way of the fourth bearing.

18. (original) The assist apparatus for an electric-powered power steering apparatus of Claim 17 above wherein the elastic-force application means comprises a torsion coil spring that is located around the worm shaft.

19. (original) An assist apparatus for an electric-powered power steering apparatus having a torque sensor, assist shaft, worm wheel, worm shaft, and electric motor, and comprising a first bearing and fourth bearing; wherein the torque sensor is located around the steering shaft or pinion; the assist shaft is one of the steering shaft, pinion and a sub-pinion; the worm wheel is fastened to one of the steering shaft, pinion and sub-pinion; the worm shaft is formed with a worm that meshes with the worm wheel; and the electric motor comprises a rotating shaft that is integrated with a part of the worm shaft, a rotor that is located around the outer-diameter side of

the rotating shaft, and a stator that is located such that it faces the rotor in the radial direction; wherein the first bearing supports the end of the rotating shaft on the side opposite from the worm shaft inside the casing such that the rotating shaft can tilt freely within a specified range; and the fourth bearing supports the end of the worm shaft on the opposite side from the rotating shaft inside the gear housing; wherein a clearance in the radial direction is provided either between the outer peripheral surface of the outer race of the fourth bearing and the inner surface of the casing, or between the inner peripheral surface of the inner race of the fourth bearing and the outer peripheral surface of the worm shaft or in the interior of the fourth bearing.

20. (original) The assist apparatus for an electric-powered power steering apparatus of Claim 19, wherein a cylindrical member is fastened around the outer peripheral surface of the worm shaft, and worm teeth are formed around the outer peripheral surface of this cylindrical member to mesh with the worm wheel.

21. (previously presented) The assist apparatus for an electric-powered power steering apparatus of Claim 19, wherein the angle between the center axis of the stator and the rotating shaft of the electric motor when driven by the electric motor is less than the angle between the center axis of the stator and the rotating shaft when not driven by the electric motor.

22. (previously presented) The assist apparatus for an electric-powered power steering apparatus of Claim 19, wherein the inner peripheral surface of the inner race of the fourth bearing faces the outer peripheral surface of the worm shaft by way of a clearance or elastic material.

23. (previously presented) The assist apparatus for an electric-powered power steering apparatus of Claim 19, wherein the fourth bearing is a sliding bearing, and wherein the inner peripheral surface of this sliding bearing faces the outer peripheral surface of the worm shaft.

24. (previously presented) The assist apparatus for an electric-powered power steering apparatus of Claim 19, wherein a hole for assembling the fourth bearing inside the gear housing that supports the fourth bearing is formed in the part of the gear housing that faces the fourth bearing, and this hole is blocked with a cover.

25. (previously presented) The assist apparatus for an electric-powered power steering apparatus of Claim 19, wherein the electric motor uses brushless construction.

26. (previously presented) The assist apparatus for an electric-powered power steering apparatus of Claim 19, wherein a support bushing is provided in part of the casing for supporting the worm shaft before it is installed inside the gear housing.

27. (previously presented) The assist apparatus for an electric-powered power steering apparatus of Claim 19, wherein a pre-load in the axial direction is applied to the balls of at least one of the first and fourth bearings.

28. (previously presented) The assist apparatus for an electric-powered power steering apparatus of Claim 19, wherein the first bearing is a four-point contact type ball bearing.

29. (previously presented) An electric-powered power steering apparatus comprising: a steering shaft having a steering wheel located at its rear end, a pinion that is located at the front end of the steering shaft, a rack whose teeth mesh with the pinion or a member supported by the pinion, the assist apparatus for an electric-powered power steering apparatus of Claim 1 and a controller for controlling the drive state of the electric motor.

30. (cancelled)

31. (currently amended): ~~The electric-powered power steering apparatus of Claim 30,~~ An electric-powered power steering apparatus wherein a torque obtained by reducing an output of an electric motor by a worm speed reducer at a magnitude corresponding to a steering torque applied to a steering wheel is applied to a steering shaft, and wherein an elastic-force application means applies an elastic force in a direction toward a worm wheel to an end of a worm shaft or to a bearing for supporting the end of the worm shaft, wherein the elastic-force application means is a pre-load pad that is located inside [[the]] a gear housing, and a torsion coil spring that is located around [[this]] the pre-load pad, and wherein [[this]] the pre-load pad is made of a synthetic resin.

32. (currently amended): ~~The electric-powered power steering apparatus of Claim 30,~~ An electric-powered power steering apparatus wherein a torque obtained by reducing an output of an electric motor by a worm speed reducer at a magnitude corresponding to a steering torque applied to a steering wheel is applied to a steering shaft, and wherein an elastic-force application means applies an elastic force in a direction toward a worm wheel to an end of a worm shaft or to a bearing for supporting the end of the worm shaft, wherein the elastic-force application means is a pre-load pad that is located inside the gear housing and a torsion coil spring that is located

around [[this]] the pre-load pad, and wherein there is a gap in [[the]] an axial direction between [[the]] a surface of [[the]] wires of each winding of the torsion coil spring.

33. (currently amended) ~~The electric-powered power steering apparatus of Claim 30,~~ An electric-powered power steering apparatus wherein a torque obtained by reducing an output of an electric motor by a worm speed reducer at a magnitude corresponding to a steering torque applied to a steering wheel is applied to a steering shaft, and wherein an elastic-force application means applies an elastic force in a direction toward a worm wheel to an end of a worm shaft or to a bearing for supporting the end of the worm shaft, wherein the elastic-force application means is a pre-load pad that is located inside [[the]] a gear housing and a torsion coil spring that is located around [[this]] the pre-load pad, and wherein an arm section is formed on part of the pre-load pad for controlling [[the]] a displacement of the pre-load pad inside [[the]] a gear housing before the worm shaft is inserted through a through hole that is formed in the pre-load pad.

34. (currently amended) ~~The electric-powered power steering apparatus of Claim 30,~~ An electric-powered power steering apparatus wherein a torque obtained by reducing an output of an electric motor by a worm speed reducer at a magnitude corresponding to a steering torque applied to a steering wheel is applied to a steering shaft, and wherein an elastic-force application means applies an elastic force in a direction toward a worm wheel to an end of a worm shaft or to a bearing for supporting the end of the worm shaft, wherein the elastic-force application means is a pre-load pad that is located inside [[the]] a gear housing and a torsion coil spring that is located around [[this]] the pre-load pad, and wherein [[the]] an area of contact between [[the]] a outer peripheral surface of the pre-load pad and the torsion coil spring is arc shaped such that [[the]] a radius of curvature of [[the]] a part on the outer peripheral surface of the pre-load pad away from the area of contact is less than the radius of curvature of the area of contact.

35. (currently amended) ~~The electric-powered power steering apparatus of Claim 30,~~ An electric-powered power steering apparatus wherein a torque obtained by reducing an output of an electric motor by a worm speed reducer at a magnitude corresponding to a steering torque applied to a steering wheel is applied to a steering shaft, and wherein an elastic-force application means applies an elastic force in a direction toward a worm wheel to an end of a worm shaft or to a bearing for supporting the end of the worm shaft, wherein the elastic-force application means is a pre-load pad that is located inside [[the]] a gear housing and a torsion coil spring that is located

around [[this]] the pre-load pad, and wherein a protruding fitting section is formed on a part of [[the]] an outer peripheral surface of the pre-load pad for preventing the torsion coil spring from falling off from around the pre-load pad.

36. (currently amended) ~~The electric-powered power steering apparatus of Claim 30,~~ An electric-powered power steering apparatus wherein a torque obtained by reducing an output of an electric motor by a worm speed reducer at a magnitude corresponding to a steering torque applied to a steering wheel is applied to a steering shaft, and wherein an elastic-force application means applies an elastic force in a direction toward a worm wheel to an end of a worm shaft or to a bearing for supporting the end of the worm shaft, wherein the elastic-force application means is a pre-load pad that is located inside [[the]] a gear housing, and wherein protrusions are formed at two or more locations on each end in [[the]] an axial direction of the pre-load pad for controlling displacement in the axial direction of the pre-load pad inside the gear housing.

37. (currently amended) ~~The electric-powered power steering apparatus of Claim 30,~~ An electric-powered power steering apparatus wherein a torque obtained by reducing an output of an electric motor by a worm speed reducer at a magnitude corresponding to a steering torque applied to a steering wheel is applied to a steering shaft, and wherein an elastic-force application means applies an elastic force in a direction toward a worm wheel to an end of a worm shaft or to a bearing for supporting the end of the worm shaft, wherein the elastic-force application means has a pre-load pad that is located inside [[the]] a gear housing, and wherein an elastic material is located between the gear housing or a member fixed to the gear housing and [[the]] an outer peripheral surface of the pre-load pad for preventing the pre-load pad from turning inside the gear housing.

38. (currently amended) ~~The electric-powered power steering apparatus of Claim 30,~~ An electric-powered power steering apparatus wherein a torque obtained by reducing an output of an electric motor by a worm speed reducer at a magnitude corresponding to a steering torque applied to a steering wheel is applied to a steering shaft, and wherein an elastic-force application means applies an elastic force in a direction toward a worm wheel to an end of a worm shaft or to a bearing for supporting the end of the worm shaft, wherein the elastic-force application means has a pre-load pad that is located inside [[the]] a gear housing, and wherein a through hole is formed in a part of the pre-load pad for inserting [[the]] a tip end of the worm shaft and a tapered

surface is formed on the part of the pre-load pad for guiding part of the worm shaft into the through hole.

39. (currently amended) ~~The electric-powered power steering apparatus of Claim 30,~~ An electric-powered power steering apparatus wherein a torque obtained by reducing an output of an electric motor by a worm speed reducer at a magnitude corresponding to a steering torque applied to a steering wheel is applied to a steering shaft, and wherein an elastic-force application means applies an elastic force in a direction toward a worm wheel to an end of a worm shaft or to a bearing for supporting the end of the worm shaft, wherein the elastic-force application means has a pre-load pad that is located inside [[the]] a gear housing, and wherein a tapered surface is formed on a part of the pre-load pad or bearing for guiding the worm shaft inside the pre-load pad or worm shaft, and wherein [[the]] a diameter of [[the]] an opening of [[this]] the tapered surface is greater than [[the]] a diameter of the part on the warm shaft that is inserted into [[this]] the opening by 0.5 mm or more.